

## A. Test program and remedies (USA starting model year 1977)

**Note**

The test program should be performed in the event of unknown causes of a defect, uncertain customer complaints, following repairs to make sure of all functions.

The tests include the cooperation of individual components. If a test step is to be repeated, set to previous test step first and wait for 1 minute. If a defect is indicated within a test step, complete the following remedies first prior to continuing the test.

1 Run engine at idle (operating temperature).  
Voltmeter switch in position "blower volts".

**Note:** The values and operating positions shown in bold print represent in each case the end condition of the test steps.

Test position		Results									
Push-button switch	Test step	"ON/OFF" switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Volt-meter readout + 1.5 V -0.5 V	Change from stage to stage after approx. s	Blower stages	Refrigerant compressor
OFF	1	ON	PARK	open	closed	closed	closed	0		0	off

**Remedies following indication of defect**

1 Test vacuum system according to function diagram 1 (83—604).

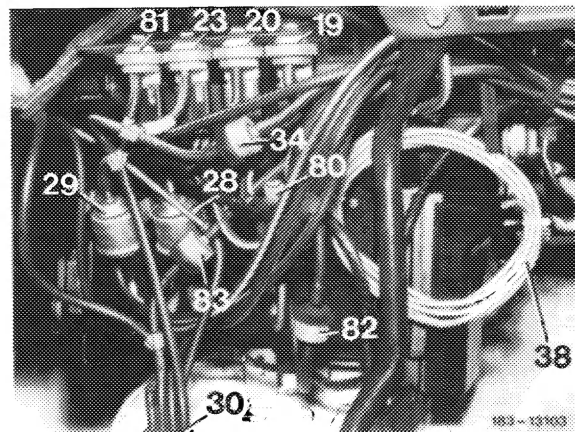
2 Test black vacuum line from connection (3) pushbutton switch to regulating valve connection (1) or vent line (39) for passage. Possibly not vented via pushbutton switch connection (3).

3 Test vacuum circuit I, II, VI (83—620 and 624).

4 Test electrical system according to wiring diagram 1 and 1 a (83–605).

5 Pull plug from vacuum switch (19, 20 and 23), test with ohmmeter, no passage.

- 19 Vacuum switch (main switch, green)
- 20 Vacuum switch (refrigerant compressor, yellow)
- 23 Vacuum switch for refrigerant compressor (at "BI-LEVEL" only)
- 28 Switchover valve legroom flaps
- 29 Switchover valve (fresh air-recirculated air flap)
- 34 Check valve
- 38 Specified leak point
- 80 Switchover valve "BI-LEVEL" (at "DEF")
- 81 Vacuum switch (at "BI-LEVEL" only)
- 82 Check valve
- 83 Check valve



Test position		Results									
Push-button switch	Test step	"ON/OFF" switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Volt-meter readout + 1.5 V – 0.5 V	Change from stage to stage after approx. s	Blower stages	Refrigerant compressor
AUTO-LO	2	ON	PARK	open	closed	closed	100	5.0		2 LO	on
	3	ON	AC	open	closed	closed	100	6.0	10	3 LO	on
				open	closed	closed	100	6.5	6	4 LO	
				open	closed	closed	20	7.0	5	5 LO	

#### Remedy following indication of defect

1 Test vacuum system according to function diagram 2 and 3 (83–604).

2 Test vacuum circuit I, II, III, IV and V (83–620, 622 and 624).

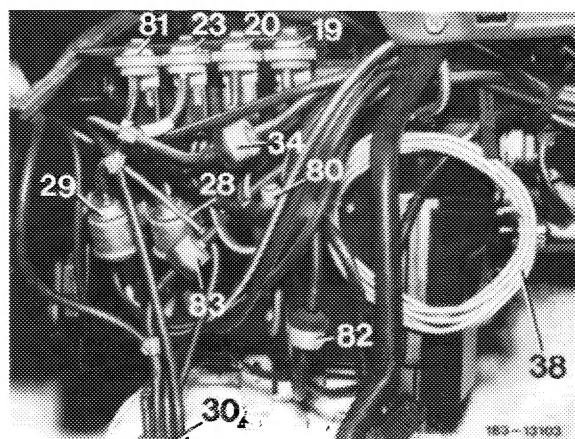
3 Test electrical system according to wiring diagram 2 and 3 (83–605).

4 Test vacuum switch (19) for passage.

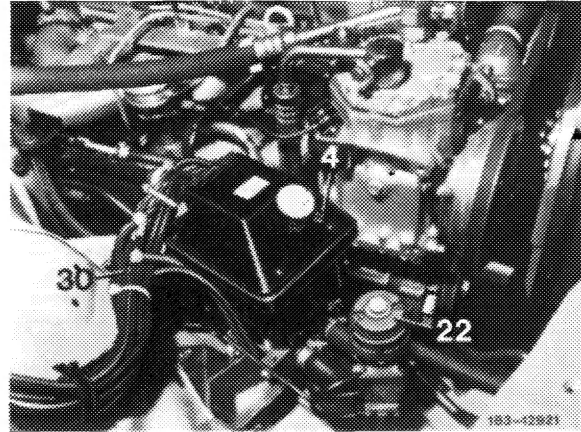
5 Perform amplifier test (83–606).

6 Check feedback potentiometer in regulating valve (83–610).

- 19 Vacuum switch (main switch, green)
- 20 Vacuum switch (refrigerant compressor, yellow)
- 23 Vacuum switch for refrigerant compressor (at "BI-LEVEL" only)
- 28 Switchover valve legroom flaps
- 29 Switchover valve (fresh air-recirculated air flap)
- 34 Check valve
- 38 Specified leak point
- 80 Switchover valve "BI-LEVEL" (at "DEF")
- 81 Vacuum switch (at "BI-LEVEL" only)
- 82 Check valve
- 83 Check valve



7 Connect new regulating valve (4) for tryout.



Layout regulating valve with heating water pump

- 2 Regulating valve
- 22 Heating water pump
- 30 Vacuum lines

Test position		Results									
Push-button switch	Test step	"ON/OFF" switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Volt-meter readout + 1.5 V -0.5 V	Change from stage to stage after approx. s	Blower stages	Refrigerant compressor
AUTO-LO	4	OFF	AC	open	open	closed	100	7.0		5 LO	off

#### Remedy following indication of defect

- 1 Test vacuum system according to function diagram 4 (83-604).
- 2 Test vacuum circuit I, II, III, IV, V and VI (83-620, 622 and 624).
- 3 Test electrical system according to wiring diagram 4 (83-605).

Test position				Results							
Push-button switch	Test step	“ON/OFF” switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Volt-meter readout + 1.5 V –0.5 V	Change from stage to stage after approx. s	Blower stages 1)	Refrigerant compressor
AUTO-LO	5 Cooling	ON	HEAT	open	closed	closed	20	7.0		5 LO	on
				open	closed	closed	100	6.5	8	4 LO	
				open	closed	closed	100	6.0	4	3 LO	
				open	closed	closed	100	5.0	4	2 LO	
				open	closed	closed	100	4.5	4	1 LO	
	Mode change			closed	open	closed*	100	4.5		1 LO	
	Heating			closed	open	closed*	100	5.0	10	2 LO	
				closed	open	closed*	100	6.0	4	3 LO	
				closed	open	closed*	100	6.5	5	4 LO	
				closed	open	closed*	100	6.5	5	4 LO	
				closed	open	closed*	100	6.5	5	4 LO	

\* ) Position "closed" includes a certain portion of leak air.

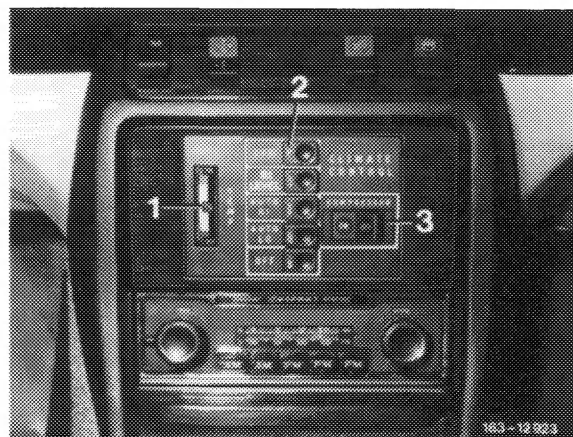
1) The blower speed in stages "HI", "BI-LEVEL" and "DEF" is noticeably higher than in stages "LO".

### Remedy following indication of defect

- 1 Test vacuum system according to function diagram 5 (83-604).
- 2 Test vacuum circuit I, II, III, IV and V (83-620, 622 and 624).
- 3 Test electrical system according to wiring diagram 5 (83-605).
- 4 System remains in cooling position, test diode in pushbutton switch (2).
- 5 Perform amplifier test (83-606).

#### Layout of control unit

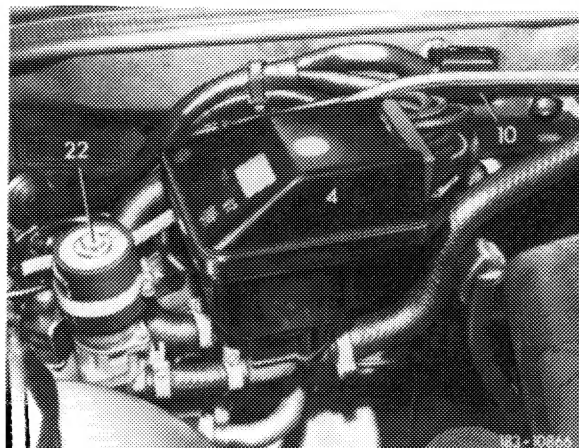
- 1 Temperature dial
- 2 Pushbutton switch
- 3 "ON/OFF" switch of refrigerant compressor



- 6 Connect new regulating valve (4) for tryout.

#### Layout of regulating valve with heating water pump

- 4 Regulating valve
- 22 Heating water pump
- 30 Vacuum lines



Test position				Results							
Push-button switch	Test step	“ON/OFF” switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Volt-meter readout + 1.5 V –0.5 V	Change from stage to stage after approx. s	Blower stages <sup>1)</sup>	Refrigerant compressor
AUTO-HI	6	ON Heating Mode change	AC	closed	open	closed*	100	9.5	15	2 HI	on
				closed	open	closed*	100	8.0		1 HI	
	Cooling	open		closed	closed	100	8.0	1 HI			
		open		closed	closed	100	9.5	43	2 HI		
				open	closed	closed	20	10.5	7	3 HI	

\* ) Position "closed" includes a certain portion of leak air.

<sup>1)</sup> The blower speed in stages "HI", "BI-LEVEL" and "DEF" is noticeably higher than in stages "LO".

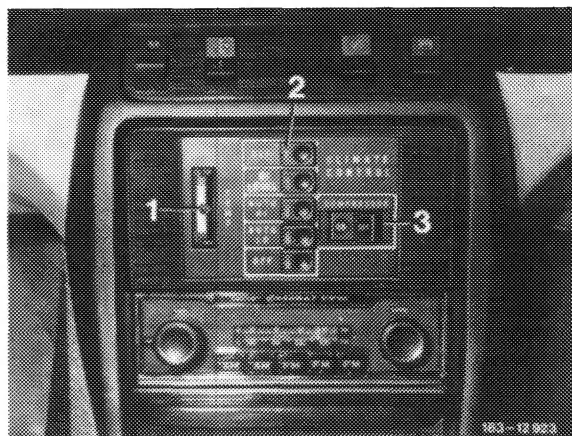
#### Remedy following indication of defect

- 1 Test vacuum system according to function diagram 3 (83-604).
- 2 Test vacuum circuit II, III and IV (83-620, 622 and 624).
- 3 Test electrical system according to wiring diagram 6 (83-605).
- 4 Test pushbutton switch (83-621).

Test position				Results							
Push-button switch	Test step	"ON/OFF" switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Volt-meter readout + 1.5 V -0.5 V	Change from stage to stage after approx. s	Blower stages	Refrigerant compressor
BI-LEVEL	7	ON	AC	open	open	open	20	9.5		2 HI	on

#### Remedy following indication of defect

- 1 Test vacuum system according to function diagram 6 (83-604).
- 2 Test vacuum circuit III (83-622).
- 3 Test electrical system according to wiring diagram 7 (83-605).
- 4 Test pushbutton switch (2) (83-621).

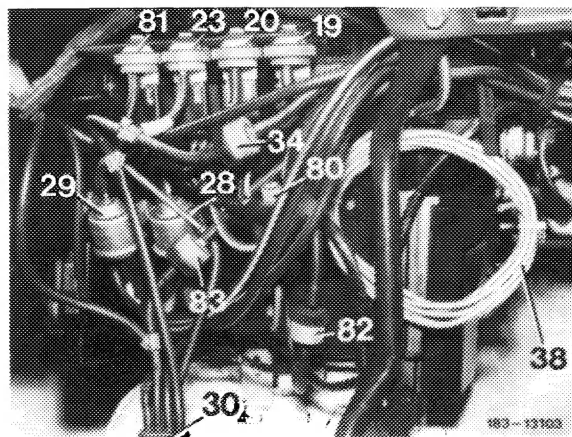


Test position		Results									
Push-button switch	Test step	"ON/OFF" switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Volt-meter readout + 1.5 V -0.5 V	Change from stage to stage after approx. s	Blower stages	Refrigerant compressor
BI-LEVEL	8	OFF	AC	open	open	open	100	9.5		2 HI	on

#### Remedy following indication of defect

- 1 Test vacuum system according to function diagram 7 (83-604).
- 2 Test vacuum circuit III and IV (83-622).
- 3 Compressor switch (23) activated with a vacuum.
- 4 Test electrical system according to wiring diagram 8 and 8 a (83-605).
- 5 Test vacuum switch (23).

- 19 Vacuum switch (main switch, green)
- 20 Vacuum switch (refrigerant compressor, yellow)
- 23 Vacuum switch for refrigerant compressor (at "BI-LEVEL" only)
- 28 Switchover valve legroom flaps
- 29 Switchover valve (fresh air-recirculated air flap)
- 34 Check valve
- 38 Specified leak point
- 80 Switchover valve "BI-LEVEL" (at "DEF")
- 81 Vacuum switch (at "BI-LEVEL" only))
- 82 Check valve
- 83 Check valve



Test position		Results									
Push-button switch	Test step	"ON/OFF" switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Volt-meter readout + 1.5 V -0.5 V	Change from stage to stage after approx. s	Blower stages	Refrigerant compressor
BI-LEVEL	9	ON	HEAT	open	open	open	20	9.5		2 HI	on
				open	open	open	20	8.5	8	2 HI	
				open	open	open	100	9.5		2 HI	
				closed	open	open	100	8.0	2	1 HI	
				closed	open	open	100	9.5	30	2 HI	

### Remedy following indication of defect

- 1 Test vacuum system according to function diagram 8 (83–604).
- 2 Test vacuum circuit III and IV (83–622)
- 3 Test electrical system according to wiring diagram 9 (83–605).
- 4 Regulating valve moves from cooling to heating.

Test position		Results									
Push-button switch	Test step	“ON/OFF” switch of refrigerant compressor	Mode switch	Center jet	Leg-room flap	De-froster jet flaps	Fresh air-recirculated air flap (fresh air data in %)	Volt-meter readout + 1.5 V –0.5 V	Change from stage to stage after approx. s	Blower stages <sup>1)</sup>	Refrigerant compressor
DEF	10	ON	HEAT	closed	closed	open	100	11.0		4 HI	on

### Remedy following indication of defect

- 1 Test vacuum system according to function diagram 9 (83–604).
- 2 Test vacuum circuit III and IV (83–622).
- 3 Test electrical system according to wiring diagram 10 (83–605).

### B. Testing of sensor chain and temperature dial with tester

	Ambient temperature sensor	In-car temperature sensor	Temperature dial	Remedies
Pushbutton switch	AUTO-LO	AUTO-LO	AUTO-LO	Following indication of defect and complaints about temperature, test temperature sensor with ohmmeter (83–609 and 610).
Temperature dial	—	—	75 °F	
Mode switch	AC	AC	AC	
Voltmeter switch	ambient sensor	in-car sensor	temp control	
Operating condition	idle	idle	idle	
Voltmeter readout	2 to 8 V*	3 to 10 V	3 to 10 V	

\* Temperature sensor may be defective even though voltage value is within tolerance.